What is claimed is:

1. A hydraulic pressure reserve system for a vehicle hydraulic system including a primary hydraulic circuit including a hydraulic pump and a hydraulic sump and providing hydraulic pressure to at least a hydraulically actuated transmission, the hydraulic pressure reserve system comprising:

an accumulator tank connected from the primary hydraulic circuit for storing a reserve of hydraulic fluid at an accumulator pressure, and

an accumulator control valve for controlling a flow of hydraulic fluid between the primary hydraulic circuit and the accumulator tank, and

an accumulator controller responsive to a primary hydraulic circuit pressure and to the accumulator pressure for controlling the accumulator control valve, wherein

the accumulator controller actuates the accumulator control valve to allow a flow of the hydraulic fluid from the primary hydraulic circuit and into the accumulator tank when the primary hydraulic circuit pressure is greater than the accumulator pressure, and

the accumulator controller actuates the accumulator control valve to allow a flow of the hydraulic fluid from the accumulator tank to the primary hydraulic circuit when the primary hydraulic circuit pressure is lower than a desired minimum primary hydraulic circuit pressure, thereby raising the primary hydraulic circuit pressure towards a desired primary hydraulic circuit pressure.

2. The accumulator reserve system for a vehicle hydraulic system of claim 1 wherein:

the accumulator control valve includes a bidirectional valve allowing a bidirectional flow of hydraulic fluid between the accumulator tank and the primary circuit, and

the accumulator controller includes a spring biased bidirectional valve controller actuating the bidirectional valve dependent upon a differential pressure across the valve controller between the primary circuit and the accumulator tank, such that

when there is a positive differential pressure across the bidirectional valve controller wherein the primary circuit hydraulic pressure is greater than the accumulator pressure be greater than a selected positive actuation pressure, the bidirectional valve is opened by the bidirectional valve controller to allow the hydraulic fluid to from into the accumulator tank and the accumulator pressure to rise accordingly, and

when there is a negative differential pressure across the bidirectional valve controller wherein the primary circuit pressure is less than the accumulator pressure by greater than a selected negative actuation pressure, the bidirectional valve is opened by the bidirectional valve controller to allow the hydraulic fluid to flow from the accumulator tank to the primary circuit, thereby raising the primary hydraulic circuit pressure towards a desired primary hydraulic circuit pressure.

3. The accumulator reserve system for a vehicle hydraulic system of claim 2 wherein:

the magnitude of the positive actuation pressure is less than the magnitude of the negative actuation pressure.

4. The accumulator reserve system for a vehicle hydraulic system of claim 2 wherein:

wherein the bidirectional valve controller includes positive and negative adjustable bias springs acting upon the bidirectional valve.

5. The accumulator reserve system for a vehicle hydraulic system of claim 4 wherein:

the positive and negative actuation pressures are selected to provide hysteresis in opening and closing of the bidirectional valve.

6. The accumulator reserve system for a vehicle hydraulic system of claim 1 wherein:

a first accumulator control valve and a corresponding first accumulator controller connected from the primary circuit and to the accumulator tank for controlling the flow of hydraulic fluid from the primary hydraulic circuit and to accumulator tank, and

a second accumulator control valve and a corresponding second accumulator controller connected from the primary circuit and to the accumulator controller for in parallel with the first accumulator control valve and the first accumulator controller for controlling the flow of hydraulic fluid from the accumulator tank and to the primary hydraulic circuit.

7. A hydraulic pressure reserve system for a vehicle hydraulic system including a primary hydraulic circuit including a hydraulic pump and providing hydraulic pressure to at least a hydraulically actuated transmission, the hydraulic pressure reserve system comprising:

a primary gear set including a primary gear connected from a primary drive and driving a secondary gear,

an auxiliary gear set including an auxiliary primary gear connected from an auxiliary drive and driving an auxiliary secondary gear,

a primary drive clutch connected from the secondary gear for connecting the secondary gear to drive the hydraulic pump when the primary drive clutch is actuated,

an auxiliary drive clutch connected from the auxiliary secondary gear for connecting the auxiliary secondary gear to drive the hydraulic pump when the auxiliary drive clutch is actuated.

8. The hydraulic pressure reserve system for a vehicle hydraulic system of claim 7, further comprising:

a hydraulic drive controller responsive to a hydraulic pressure of the hydraulic system to

disengage the primary drive clutch and engage the auxiliary drive clutch when the hydraulic pressure of the hydraulic system is less than a selected minimum pressure, and

engage the primary drive clutch and disengage the auxiliary drive clutch when the hydraulic pressure of the hydraulic system is greater than a selected operating pressure.

9. The hydraulic pressure reserve system for a vehicle hydraulic system of claim 7, wherein:

the primary and secondary drive gears are engaged through a drive chain.

10. The hydraulic pressure reserve system for a vehicle hydraulic system of claim 7, wherein:

the auxiliary primary and secondary drive gears are engaged through a shared drive chain.

11. A hydraulic pressure reserve system for a vehicle hydraulic system including a primary hydraulic circuit including a hydraulic pump and providing hydraulic pressure to at least a hydraulically actuated transmission, the hydraulic pressure reserve system comprising:

a primary gear connected from a primary drive by a primary drive clutch,

an auxiliary primary gear connected from an auxiliary drive by an auxiliary drive clutch, and

a secondary gear engaged with the primary gear and the auxiliary primary gear and connected to drive the pump,

the primary drive driving the hydraulic pump through the primary gear and the secondary gear when the primary drive clutch is actuated, and

the auxiliary drive driving the hydraulic pump through the auxiliary primary gear and the secondary gear when the auxiliary drive clutch is actuated.

12. The hydraulic pressure reserve system for a vehicle hydraulic system of claim 11, further comprising:

a hydraulic drive controller responsive to a hydraulic pressure of the hydraulic system to

disengage the primary drive clutch and engage the auxiliary drive clutch when the hydraulic pressure of the hydraulic system is less than a selected minimum pressure, and

engage the primary drive clutch and disengage the auxiliary drive clutch when the hydraulic pressure of the hydraulic system is greater than a selected operating pressure.

13. The hydraulic pressure reserve system for a vehicle hydraulic system of claim 11, wherein:

the primary, auxiliary primary and secondary drive gears are mutually engaged through a shared drive chain.